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It is possible and often probable that desert deltas of great size are surprisingly rapid in their growth. When chanced to be restricted by quiet bodies of water, as in the case of old Lake Bonneville, they are rendered so exceptionally conspicuous as to excite wonderment. Therefore the Provo deltas do not necessarily imply very long, or even any, tarrying of Bonneville lake surface at this level. It is possible and even probable that these deltas were actually formed during the regular or uniform recession of the lake waters. Desert delta growth may take place with unexpected rapidity, measurable by days or even hours rather than eons.

CHARLES KEYES

SCIENTIFIC BOOKS

The Botany of Crop Plants. A text and reference book. By WILFRED W. ROBBINS. P. Blakiston's Son & Co., Philadelphia, 1917, pp. xix + 681, f. 263. Price \$2.00.

THE Botany of Crop Plants, by Wilfred W. Robbins, of the Colorado Agricultural College, is an important contribution to our text-books on economic botany. The book has been written to meet a growing demand for a text and reference book which will give the student a knowledge of the botany of common orchard, garden and field crops. To the teacher who is engaged in the teaching of botany, especially the economic phase of the subject, the work of Dr. Robbins will be found of great value.

It has been difficult to refer students to a single text-book giving an adequate discussion of this phase of botany. Botanists are to blame themselves for allowing the economic side of the subject to slip away from them. This book should, therefore, pave the way for a more adequate study of our crop plants from the standpoint of agriculture and horticulture. Botanists should make use of our cultivated plants when it is possible to utilize them to illustrate life processes.

The text-book of Dr. Robbins is divided into two parts; Part I., consisting of 8 chapters, takes up such topics as the fundamental organs of seed plants; the cell, root, stem,

leaf, flower, fruit, seed and seedling, classification and naming of plants. When possible the author has used economic plants as a basis for the discussion. This portion of the text is brief, covering only 67 pages. In Part II. the author has arranged the subject from a systematic standpoint. Chapters IX.—XIX. inclusive are devoted to the grasses, first importance being given to the cereals, wheat, oats, barley, rye, maize, sorghum, rice, millet, timothy and sugar cane. Under the subject of wheat he discusses the habit of the plant, root, stem, leaf, inflorescence, spikelet, flower, pollination, artificial cross pollination, fertilization and maturing of grain, ripening stages, the mature grain, *e. g.*, ovary wall or pericarp, testa, nucellus, endosperm, aleurone layer, starchy endosperm, embryo. The author follows this botanical matter with economic phases of the subject as hard and soft wheats, millings of wheat, kinds of flour, germination of wheat, etc. He then discusses the classification of wheats, origin of wheat, environmental relations. In the bibliography some 29 references for purposes of study are referred to. The papers for the most part are accessible. One wonders why the work of Körnicke "*Die Getreidearten*", which is one of the best of the older works on the subject, is not referred to. However, the student will find the references given valuable in looking up material. Each one of the other cereals is taken up in the same way.

A short chapter is devoted to timothy. It would have added to the value of this chapter if some of the other forage grasses had been considered, say blue grass, which is the most important pasture plant of the northern states. This review would be unduly lengthened, should I refer to the other economic plants he has considered. Mention may, however, be made of the treatment found under the head of Moraceæ, in which the mulberry, hop, fig and hemp are taken up. In the account of the fig there is an adequate statement on pollination. This chapter, like others, gives some important references. In some cases, however, some important references are omit-

ted, as in the bibliography of the cucurbits. The author has made a most useful book and it should stimulate botanists to get some of the old lines of work back into botany, rather than let it continue to be taught by men who have other lines of interest, than botany. The book is therefore a most welcome addition to our literature of practical botany.

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The Genera of Fishes, from Linnæus to Cuvier, 1758-1833, Seventy-five Years, with the accepted Type of Each. A contribution to the Stability of Scientific Nomenclature. By DAVID STARR JORDAN, assisted by BARTON WARREN EVERMANN. (Published by Stanford University, 1917.)

It is a reproach to zoologists that so much uncertainty exists about the proper names of animals. To an outsider it appears inexplicable that the numerous competent students of taxonomy do not put their house in order, and settle once for all the questions which they find so vexatious. The difficulty is that these matters demand exhaustive bibliographical research, and few have access to the necessary books, even if they could afford to take the time to digest them. Proposed changes, based on fragmentary research, are naturally regarded with doubt, since other investigations may show them to be needless. The only satisfactory solution must come through reviews of the whole of the pertinent literature of any group under discussion. Such a review, so far as it concerns the genera of fishes named from 1758 to 1833, is given by Dr. Jordan in a work just published by Stanford University. The various publications are enumerated in chronological order, and all the new generic names are cited, with indications of the type species. Explanatory notes, often of considerable length, are added. Thus the reader is put in possession of the facts, and is at liberty to form his own opinions. The list is doubtless substantially complete, although it is stated in the introduction that other names may yet be discovered in dictionaries and obscure publi-

cations.¹ At the end is a series of lists, showing the various necessary or possible changes in nomenclature. These lists are as follows:

- (A) Changes resting in priority, involving 73 names, though in nine of these the generic name remains as currently accepted, only the authority being altered. It is greatly to be regretted that our common genus of darters, *Etheostoma* of all modern authors, must apparently be called *Catonotus*. The names adopted from A. F. Röse (1793) appear to me to be of doubtful validity, being mere transliterations of the Greek names of Aristotle. The work itself being in Latin, the Aristotelian names were given with Latin equivalents. The matter is of importance to entomologists as it involves the name *Phycis*, used at present for a genus of moths, the type of a subfamily.
- (B) Changes resulting from the operations of opinions 20 and 37 of the International Commission, admitting the names of Gronow. Those of Klein are held to be equally valid or invalid. These authors do not use the Linnean binomial system, and Dr. Jordan questions the validity of the names. In spite of the opinions of the Commission, it appears evident that all these names should be rejected.
- (C) Changes resulting from opinion 24 of the Commission, which if logically followed must also admit four names of Plumier. The Plumierian names were polynomial and we must agree with Dr. Jordan that they should be rejected. Although few, they involve some very objectionable changes.
- (D) Hypothetical changes according to law of priority, but doubtfully eligible; apparently to be rejected under opinion 57 of the Commission.

¹ I hear from Dr. Jordan that he has found two omissions: *Congiopodus* Perry, 1811, the same as *Agriopus*; and *Rhomboides* Goldfuss, 1820, a substitute for *Rhombus* Cuvier, preoccupied.